

WHAT IS CLAIMED IS:

1. A method for selectively forming a pattern for making openings in a substrate, the method comprising:

forming a first set of openings in a first photoresist layer coated on the substrate using a first mask;

forming a bottom antireflective coating (BARC) layer over the first photoresist with the openings filled therewith;

forming a second photoresist layer over the BARC layer;

forming a second set of openings in the second photoresist layer using a second mask exposing the BARC layer directly underneath; and

removing the exposed part of the BARC layer,

wherein one or more openings of the first set in the first photoresist layer, after the exposed part of the BARC layer filled therein is removed, are used for forming the openings in the substrate.

2. The method of claim 1 wherein the first mask has a packed pattern and the second mask has an unpacked pattern.

3. The method of claim 2 wherein the packed pattern defines the openings in the first photoresist layer and the unpacked pattern defines the openings in the second photoresist layer.

4. The method of claim 3 wherein the openings in the second photoresist layer are wider than the openings in the first photoresist layer underneath.

5. The method of claim 1 further comprising forming openings by etching off the substrate to form one or more openings therein.

6. The method of claim 1 wherein the forming a BARC layer further includes soft baking the BARC layer.

7. The method of claim 1 wherein the BARC layer is a developing bottom antireflective coating layer.

8. A method for forming a photoresist pattern to make openings in a substrate comprising:

forming a first photoresist layer over a substrate;

exposing the first photoresist layer to a light source through a first mask;

forming a first set of openings in the first photoresist layer by removing the exposed portion of the first photoresist layer;

forming a bottom antireflective coating (BARC) layer over the first photoresist and the first set of openings, the BARC layer having a flat surface;

forming a second photoresist layer over the BARC layer;

exposing the second photoresist layer to the light source through a second mask;

forming a second set of openings in the second photoresist layer exposing the BARC layer directly underneath; and

removing the exposed BARC layer;

wherein one or more openings of the first set of openings in the first photoresist layer, after the exposed BARC layer filled therein is removed, are used for forming the openings in the substrate.

9. The method of claim 8 wherein the first mask has a packed pattern and the second mask has an unpacked pattern which protects one or more openings of the first set of openings from being used to define the openings in the substrate.
10. The method of claim 8 wherein the openings in the second photoresist layer are wider than the openings in the first photoresist layer underneath.
11. The method of claim 8 wherein the forming a first set of openings further includes hard baking the substrate and the first photoresist.
12. The method of claim 8 wherein the forming a BARC layer further includes soft baking the BARC layer.
13. The method of claim 8 wherein the forming a second photoresist layer further includes soft baking the second photoresist layer.
14. The method of claim 8 further comprising hard baking the first and second photoresist layers and the BARC layer after the exposed BARC layer is removed.

15. The method of claim 8 wherein the BARC layer is a developing bottom antireflective coating layer (DBARC).

16. A method for forming openings in a substrate comprising:

forming a first photoresist layer over a substrate;

exposing the first photoresist layer to a light source through a first mask;

forming a first set of openings in the first photoresist layer by removing the exposed portion of the first photoresist layer;

forming a bottom antireflective coating (BARC) layer over the first photoresist and the first set of openings, the BARC layer having a flat surface;

forming a second photoresist layer over the BARC layer;

exposing the second photoresist layer to the light source through a second mask;

forming a second set of openings in the second photoresist layer exposing the BARC layer directly underneath; and

removing the exposed BARC layer; and

removing the substrate directly underneath one or more openings of the first set of openings in the first photoresist layer after the exposed BARC layer filled therein is removed,

wherein the second mask is used to protect one or more openings of the first set of openings from being used to define the openings in the substrate.

17. The method of claim 16 wherein the forming a first set of openings further includes hard baking the substrate and the first photoresist.

18. The method of claim 16 wherein the forming a BARC layer further includes soft baking the BARC layer.

19. The method of claim 16 wherein the forming a second photoresist layer further includes soft baking the second photoresist layer.

20. The method of claim 16 further comprising hard baking the first and second photoresist layers and the BARC layer after the exposed BARC layer is removed.

21. The method of claim 16 wherein the BARC layer is a developing bottom antireflective coating layer (DBARC).